

REMARKS

In view of the above amendments and the following remarks, favorable reconsideration of the outstanding office action is respectfully requested.

Claims 1-5, 7 and 8 remain in this application. Applicants believe that no new matter is added to the application as part of this response.

1. Amendments

Claims 1, 2, 4, 7 and 8 have been rewritten to recite a zircon refractory brick. Support for this limitation is found throughout the specification as filed (e.g. at page 6, line 14; and claim 6).

Claim 5 has been rewritten to more clearly point out the claimed subject matter.

Claim 8 has been rewritten to depend from claim 1.

Claims 6 and 9-14 have been canceled without prejudice.

No new matter is believed to be added to the application by these amendments.

2. Restriction Requirement

The Examiner has issued a restriction requirement, dividing the claims into two groups:

- I. Claims 1-8, drawn to a method of producing a fused oxide body, classified in class 423, subclass 336+; and
- II. Claims 9-14, drawn to an apparatus for producing a fused oxide body, classified in class 422, subclass 129+.

During a telephone conversation with Mr. Schaeberle on September 29, 2003, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-8. Applicant hereby affirms the election of Group I. Claims 9-14 have been canceled in this response.

3. Claim Rejections – 35 U.S.C. § 112

The Examiner has rejected claims 1-8 under 35 U.S.C. § 112, first paragraph. The Examiner asserts that the specification, while being enabling for zircon as the

refractory material, does not reasonably provide enablement for other refractory material, such as silica.

Claim 6 has been canceled, rendering moot the rejection thereof.

Claims 1, 2, 4, 7 and 8 have been rewritten to recite a zircon refractory material. Applicant therefore requests that the Examiner withdraw the rejections of claims 1-5, 7 and 8 under 35 U.S.C. § 112, first paragraph.

4. Claim Rejections – 35 U.S.C. § 103(a) - Sempolinski et al. in view of Arendt

The Examiner has rejected claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over Sempolinski et al. (U.S. Patent 5,395,413) in view of Arendt (U.S. Patent 4,361,542). The Examiner asserts that it would have been obvious to use individual steps of the zircon retrieval method of Arendt to further purify the zircon refractory materials of Sempolinski et al.

Claim 6 has been canceled, rendering moot the rejection thereof.

Arendt describes a method for retrieving zircon from naturally available zircon sand, which contains a significant amount (e.g. about 12%) of impurities such as SiO_2 (e.g. about 10 wt%) and iron (e.g. about 1 wt%). An aqueous slurry of the sand is ground to less than about 5 microns in size, and is mixed with concentrated nitric and hydrochloric acids, and agglomerated. The agglomerated mass is mixed with concentrated hydrofluoric acid, and the resulting zircon particles are washed with water and dried to provide particulate zircon with less than about 0.2% by weight of impurities.

Applicant submits that there is no suggestion or motivation for the skilled artisan to use a surface acid washing method to further purify the zircon refractory materials of Sempolinski et al. First, while Sempolinski et al. does suggest that in a SiCl_4 -based process, the hot HCl gas byproduct serves to clean the refractory bricks *in situ*, it teaches away from the undesirable use of HCl (see, e.g., col. 1, lines 40-48). Further, Sempolinski et al. provides no teaching or suggestion that further purification is needed; the use of cleaner starting materials in the refractory bricks means that the sodium level can be low, even in the absence of the cleaning effect of the HCl byproduct. Sempolinski et al. does not teach or suggest any deleterious effects from any other contaminants.

Applicant further submits that the skilled artisan would not be motivated to use the process steps of Arendt to clean the zircon refractory materials of the present invention because of the surface-limited character of the Arendt process. In Arendt, the zircon sand must be ground very fine (e.g. average particle sizes of 0.2-5 microns), since the reaction of impurities with the acid does not penetrate very deeply into the bulk zircon material. In the present invention, the refractory materials are treated as formed zircon bricks. There is no teaching or suggestion in Sempolinski that surface treatment of the bricks with liquid acid would be sufficient to provide very low levels of impurities. In fact, other processes developed for removing contaminants from zircon bricks are performed under conditions in which there would be significant penetration of cleaning reagents into the brick. (See, e.g., page 4, lines 12-31 of the present application). For example, in one such process a refractory brick is treated with a halogen gas at temperatures of 700-1500 °C, more preferably 1100-1500 °C. In another such process, a refractory brick is treated with chlorine gas in a bed of loose carbon at temperatures of 1000-1500 °C. These conditions are very different than those used in a liquid acid cleaning; the temperatures are much higher. Similarly, deposition of SiO₂ in a furnace takes place at temperatures (>1650 °C) at which volatile contaminants would be expected to have some mobility in the refractory brick. As such, the skilled artisan would not expect surface cleaning of refractory bricks at low temperature in liquid acid to have much of an effect on the contaminant level in the ultimate glass, and would therefore not be motivated to use a surface cleaning method.

Applicant further submits that the skilled artisan would not be motivated to use the process steps of Arendt to clean the zircon refractory materials of the present invention because of the great difference in contaminant levels between the two materials. The process of Arendt is used to retrieve relatively pure (e.g., less than 0.2% impurity) zircon from raw, as-mined zircon sand having high levels of impurities (e.g., about 12% impurity). The skilled artisan would not expect such a process to be likely to produce ultrapure zircon bricks (e.g. less than 300 ppm, or 0.03% impurity) from already relatively pure as-made zircon brick.

Since the skilled artisan would not be motivated to use the individual steps of the zircon retrieval method of Arendt to further purify the zircon refractory materials of the present invention, Applicant submits that the Examiner has not made a *prima*

facie case of obviousness, and requests that the rejections of claims 1-5 under 35 U.S.C. § 103(a) be withdrawn.

5. Claim Rejections – 35 U.S.C. § 103(a) - Sempolinski et al. in view of Arendt, and further in view of “admitted prior art.”

The Examiner has rejected claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Sempolinski et al. in view of Arendt, and further in view of “admitted prior art.”

The Examiner asserts that the description of the carbochlorination process on page 4 of the present application is admitted as prior art. Applicant respectfully disagrees with the Examiner’s apparent assumption that anything disclosed in the Background of the Invention section is admitted as prior art. According to the M.P.E.P.,

“The Background of the Invention ordinarily comprises two parts:

- (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions. The statement should be directed to the subject matter of the claimed invention.
- (2) Description of the related art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A paragraph(s) describing to the extent practical the state of the prior art or other information disclosed known to the applicant, including references to specific prior art or other information where appropriate. Where applicable, the problems involved in the prior art or other information disclosed which are solved by the applicant’s invention should be indicated. See also MPEP § 608.01(a), § 608.01(p) and § 707.05(b).”
(M.P.E.P. § 608.01(c))

Applicant notes that the Background of the Invention section is meant to describe related art, which includes prior art, but may include other information where appropriate.

The carbochlorination process is described on page 4 of the application as being one procedure that “has been developed” to achieve a high degree of refractory brick purity. There is no explicit admission that this process is prior art. In fact, this process was described in Applicant’s copending U.S. Patent Application Serial Number 09/125,208, now U.S. Patent 6,574,991, issued June 10, 2003. This patent application was not published. As such, the carbochlorination subject matter

described therein and at page 4 of the present application could only be prior art under 35 U.S.C. § 102(e).

At the time the present invention was made, the present invention and U.S. Patent Application Serial Number 09/125,208 were owned by, or subject to an obligation of assignment to, Corning Incorporated.

Since the present invention and the carbochlorination subject matter were commonly owned at the time of the present invention, the carbochlorination subject matter cannot be used in a § 102(e)/§ 103(a) rejection. (35 U.S.C. § 103(c)). As such, Applicant requests that the Examiner withdraw the rejections of claims 7 and 8 under 35 U.S.C. 103(a).

Applicant further notes that claims 7 and 8 are also believed to be patentable for the reasons described above with reference to claims 1-5.

6. Conclusion

Based upon the above amendments, remarks, and papers of record, Applicant believes the pending claims 1-5, 7 and 8 of the above-captioned application are in allowable form and patentable over the cited references. Applicant respectfully requests reconsideration of the pending claims and prompt further action thereon.

Applicant believes that no extension of time is necessary to make this Response timely. Should Applicant be in error, Applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to James V. Suggs at 607/974-3606.

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Respectfully submitted,

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